Distribute DVI and stereo audio over one single mode or multimode fiber with no compression, scaling, conversions or frame dropping. The 7500 Series is feature rich, including our unique Triple EDID function and Lock Bandwidth and Equalization capabilities!

Fiberlink®
7500, 7510 & 7514 Series

DVI and Stereo Audio Transmission over one single mode or multimode fiber.

CSI Communications Specialties, Inc.

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Welcome

Thank you for purchasing Communications Specialties, Inc.'s Fiberlink® 7500 Series. The 7500 Series is used to transmit pristine DVI and stereo audio over a single fiber optic core. Compatible with single mode or multimode fiber, the 7500 is ideal for the most demanding of applications, from distance learning to rental and staging. The 7500 offers a unique Triple EDID function that allows you to generate EDID internally, from a loop-through monitor or you can permanently capture and store EDID information.

Features

- Supports DVI-D single-link resolutions up to 1920 x 1200 at 165 MHz pixel clock and HDTV resolutions of 480p, 1080i, and 1080p (DVI format)
- Transmits single-link DVI (640 x 480 up to 1920 x 1200 - 165 MHz pixel clock)
- Dual Optical Output multimode version available. (Model 7502)
- Supports HDTV resolutions of 480p, 720p, 1080i and 1080p (DVI format)
- Uses no compression, color space conversion, frame dropping or scaling for crystal clear signals
- Only one fiber used - no pixel skewing
- Supports up to 45 foot (13.72m) DVI input cable
- DVI Input loop-through
- Supports EDID from loop-through, internal generation, or capture and storage.
- Requires no adjustments, equalization or de-skewing during installation
- Advanced input circuit equalizes and re-clocks noisy and distorted DVI input signals
- Two DVI outputs on box receiver allows for driving two monitors
- Transmits signals over one single mode or multimode fiber optic core.
- Low audio/video skew, <300 uSec
- Complete, ready-to-install kits are available for both Box and Card versions
- RoHS Compliant

Package Contents

- One Fiberlink® 7500, 7510, 7501, 7511, 7502, 7512, 7514, 7515 or 7516.
- This User's Manual

Technical Specifications

Model Part Number Specification

Unit Type	Part Number
Single Mode Transmitter Box	7500-B7S, 7510-B7S, 7514-B7S
Single Mode Transmitter Card	7500-C7S, 7510-C7S or 7514-C7S
Single Mode Receiver Box	7501-B7S , 7511-B7S or 7515-B7S
Single Mode Receiver Card	7501-C7S, 7511-B7S or 7515-C7s
Multimode Transmitter Box	7500-B1S, 7510-B1S or 7514-B1S
Multimode Transmitter Card	7500-C1S, 7510-C1S or 7514-B1S
Multimode Receiver Box	7501-B1S, 7511-B1S or 7515-C1S
Multimode Receiver Card	7501-C1S, 7511-C1S or 7515-C1S
Multimode Dual Optical Output Transmitter Box	7502-B1S, 7512-B1S or 7516-B1S
Multimode Dual Optical Output Transmitter Card	7502-C1S, 7512-C1S or 716-C1S

Video

Number of Video Channels	1 single-link DVI up to 1920x1200
Video Processing	24 bits, no compression or scaling
DVI Input Loop-through	Yes
EDID (DDC) Support	Yes, from loop-through, internal generation, or storage and capture
Pixel Clock Range	25 - 165 Mhz, continuous
Scanning System Supported	Progressive or Interlaced
Format Supported	RGB or YPrPb

Audio Specifications

Number of Audio Channels	2, unbalanced
Frequency Response	+0/-0.5 dB, 20 Hz to 20 kHz
Bits-per-Sample/Sampling Rate	24 bits; >48kHz
Maximum Audio Level	+10 dBu
SNR (A-Weighted)	100 dB

Technical Specifications

Audio Specifications (cont.)	
THD+N	0.001%, 20 Hz - 20 kHz
Channel Phase Differential	+0.1°
Crosstalk	100 dB (1 kHz)
Input Impedance	>24 k Ohms
Output Impedance	< 1 Ohm
Audio to Video Diff. Delay (skew)	< 300 uSec

Optical Specifications:	
Operating Wavelength	SM CWDM (1300 - 1600 nm band) MM CWDM (850nm band)
Optical Fibers	SM: 8-10/125 microns; MM: 50u or 62.5u
Optical Connector	7500/7501: ST x 1; 7502: ST x 2
Class I Laser Product complies with FDA performance standard for laser products, Title 21, Code of Federal Regulations, Sub-Chapter J.	

Miscellaneous	
Operating Temp. Range	-20°C to +45°C
Operating Power	9-24 Volts AC or DC @ 10 watts (max.)
Slots filled in 6000A Card Cage	3

Operating Loss Budget & Maximum Transmission Distance*	
Single Mode Version	0-15 dB up to 15 km
Multimode Version	0-8 dB up to 0.75 km; 50u fiber 0-8 dB up to 0.35 km; 62.5u fiber
Multimode Dual Optical Output Version	0-4 dB up to 0.60 km; 50u fiber 0-4 dB up to 0.30 km; 62.5u fiber

* Distance specifications are approximate and are not guaranteed.
Operating loss budget must not be exceeded.

Installation Instructions

The Fiberlink® 7500 Series of fiber optic transmission systems are ready for immediate use and do not require any special tools or equipment. However, an Optical Power Meter, such as the Fiberlink® 6615, can be useful in determining optical loss budgets during your systems design and system maintenance.

The following instructions describe the typical installation procedure:

1) Power off your computer and the 7500 Series units.
2) Connect the DVI video source (Computer) to the video input DVI-D connector on the transmitter unit.
3) Determine your EDID requirements and follow the procedures described in the "Triple EDID Function" section of this manual.
4) Connect the video output(s) on the receiver unit to the DVI-D connector(s).
5) Connect the fiber optic cable between the two Fiberlink units.
6) Connect the audio input signals to the transmitter stereo jack and the audio output to the receiver stereo jack.
7) Apply power to both the Fiberlink units and the computer. For box versions using DC power connections, refer to Figure 1.
8) When power is applied, the green POWER LED will light, indicating the presence of operating power. The VIDEO LED will give an indication as described on page 13. The green AUDIO LED will give an indication as stated on page 13.
9) The system should now be operational.

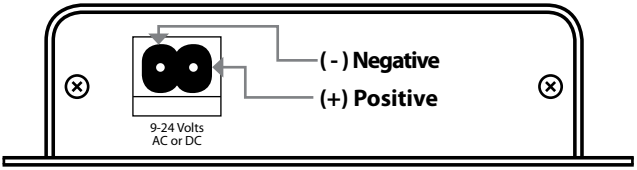
Note:
7500, 7501 and 7502 are not compatible with 7510, 7511, 7512, 7514, 7515, 7516
7510, 7511 and 7512 are not compatible with 7500, 7501, 7502, 7514, 7515, 7516
7514, 7515 and 7516 are not compatible with 7500, 7501, 7502, 7510, 7511, 7512

Note: The Rack Card version has an additional red LED for indicating the presence of an alarm condition (loss of signal). Refer to Indicator LED's and Alarm Switch Settings & Options sections of this manual.

The transmitting element in the Fiberlink® 7500 transmitter unit contains a solid state Laser Diode located in the optical connector. This device emits invisible infrared electromagnetic radiation which can be harmful to human eyes. The radiation from this optical connector, if viewed at close range with no fiber optic cable connected to the optical connector, may be sufficient intensity to cause instantaneous damage to the retina of the eye. Direct viewing of this radiation should be avoided at all times!

Installation Instructions (cont.)

Figure 1:
Power Connector
DC Input Polarity



EDID Switch Settings

The EDID Switch has two positions, Internal and Loop, as described in the chart below. For complete instructions on how to operate the 7500 Series' Triple EDID function, please refer to the "Triple EDID Function" section of this manual on page 8.

EDID Switch Settings	
Internal	When the switch is in this position, the EDID will be automatically generated. Alternatively, if EDID information was previously captured and stored, the unit will use the stored information.
Loop	The EDID information will be passed through to the DVI source from the display connected to the loop-through port of the unit. If no loop-through display is connected, the DVI source may not generate a DVI signal.

Triple EDID Function

The Fiberlink® 7500 Series of fiber optic transmission systems come with a unique "Triple EDID" feature set that allows you to capture and store EDID information, acquire EDID information from a connected loop-through display, or allow the7500/7510 or 7502/7512 unit to generate the EDID internally, on-the-fly. The procedure for implementing each are described below.

Generating EDID internally when no EDID has been stored:

1) Power off your computer and the 7500 Series units.
2) Set the EDID switch to the "Internal" position.
3) Any DVI display can optionally be connected to the loop-through port of the 7500/10/14 or 7502/12/16.
4) Power on your 7500/10/14 or 7502/12/16 Transmitter unit and the loop-through display.
5) Power on your computer.
6) The 7500/10/14 or 7502/12/16 is now operation and will generate EDID internally.

Using EDID from a loop-through display:

1) Power off your computer and the 7500 Series units.
2) Set the EDID switch to the "Loop" position.
3) Connect a display to the 7500/10/14 or 7502/12/16 loop-through port.
4) Power on your 7500/10/14 or 7502/12/16 Transmitter unit and the loop-through display.
5) Power on your computer.
6) The 7500/10/14 or 7502/12/16 is now operational and will use the EDID information acquired from the loop-through display.

Capturing and storing EDID information:

1) Power off your computer and the 7500 Series units.
2) Set the EDID switch to the "Loop" position.
3) Connect a display to the 7500/10/14 or 7502/12/16 loop-through port.
4) Power on the loop-through display.
5) Power on your 7500/10/14 or 7502/12/16 Transmitter unit.
6) Press the 'Capture EDID' button on the Transmitter as shown in Figure 2. The Video LED will flash, indicating the capture is in progress. Note that any previously stored EDID information will be overwritten.
7) When the Video LED remains off, the capture is complete.

Note: This procedure will erase any previously stored EDID information.

Triple EDID Function (cont.)

Using stored EDID information:

Before you can use a stored EDID setting, you must capture and store EDID information as described in the "Capturing and storing EDID information" procedure.

1) Power off your computer and the 7500 Series units.
2) Set the EDID switch to the "Internal" position.
3) Any DVI display can be connected to the loop-through port of the 7500/10/14 or 7502/12/16.
4) Power on your 7500/10/14 or 7502/12/16 Transmitter unit.
5) Power on your computer.
6) The 7500/10/14 or 7502/12/16 will now be using the stored EDID information.

Reseting back to factory defaults when EDID has been previously stored:

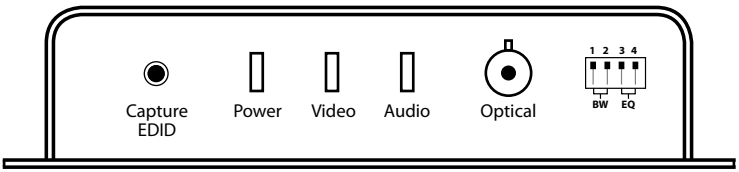
1) Power off your computer and the 7500 Series units.
2) Set the EDID switch to the "Internal" position.
3) Disconnect any display from the 7500/10/14 or 7502/12/16 loop-through port.
4) Power on your 7500/10/14 or 7502/12/16 Transmitter unit.
5) Press the 'Capture EDID' button to erase stored EDID information as shown in Figure 2.
6) The Audio LED should flash for confirmation.
7) Power on your computer.
8) The 7500/10/14 or 7502/12/16 is now operational and will generate EDID internally.

Operating Tips:

The 7500/10/14 or 7502/12/16 transmitter units can be temporarily power using a 9V battery making it very easy to bring the transmitter to a ceiling mounted projector for EDID capture and storage!

If you receive unexpected display results, you may be operating the 7500/10/14 or 7502/12/16 using EDID information that was stored during a previous installation. Try clearing any stored EDID information.

Figure 2: 7500 Box Version Panel

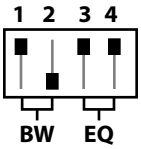


Lock Bandwidth and Input Equalization

The 7500/7510/7514 and 7502/7512/7516 transmitter units have a Lock Bandwidth (BW) and Input Equalizer (EQ) Setting Dip switches located on the front panel. The default equalizer (EQ) setting is for a short DVI cable, less than 10 feet. The default Bandwidth (BW) setting is NARROW BW. This should work for most clean, "noise-free" DVI sources. A narrow bandwidth setting should be used for dirty or noisy DVI sources.

Factory Default:

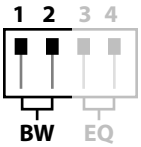
Switches 1, 3 and 4 in the up position; switch 2 in the down position.



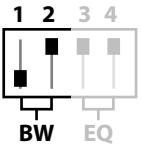
Lock Bandwidth:

Switches 1 and 2 control the Lock Bandwidth:

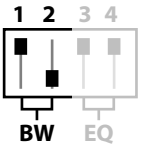
Wide



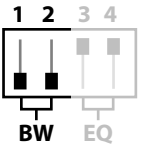
Medium



Narrow



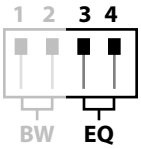
Very Narrow



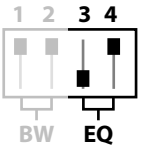
Input Equalization:

Switches 3 and 4 control the Input Equalization:

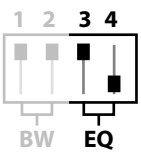
Short



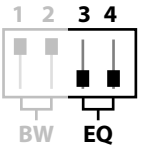
Medium



Long



Very Long



System Connections

The input and output connections for the Fiberlink 7500 Series are as follows:

Audio Connector (Transmitter & Receiver): 3.5mm stereo jack
Video Connector (Transmitter & Receiver): DVI-D connector

Video Connector

Video Pin Out	Transmitter	Receiver
1	Red (-)	Red (-)
2	Red (+)	Red (+)
3	Red Shield	Red Shield
4	N/C	N/C
5	N/C	N/C
6	DDC CLK	DDC CLK
7	DDC Data	DDC Data
8	N/C	N/C
9	Green (-)	Green(-)
10	Green (+)	Green (+)
11	Green Shield	Green Shield
12	N/C	N/C
13	N/C	N/C
14	+5V Power	+5V Power
15	GND (for +5V)	GND (for +5V)
16	Hot Plug Detect	Hot Plug Detect
17	Blue (-)	Blue (-)
18	Blue (+)	Blue (+)
19	Blue Shield	Blue Shield
20	N/C	N/C
21	N/C	N/C
22	Pixel Click Shield	Pixel Click Shield
23	Pixel Click (+)	Pixel Click (+)
24	Pixel Click (-)	Pixel Click (-)

Alarm Switch Settings & Options

The Rack Card version of this product has an additional red indicator LED that illuminates when an alarm condition exists.

The rack card unit also provides an output to drive a model 6020 Alarm Sensing Module which provides an audible tone and activates a set of contacts for external signaling purposes.

Alarm Switch Settings for the Transmitter Card

Switch Position	Alarm Indication	On	Off
1	Loss of DVI Signal	Enabled	Disabled
2	N/A	N/A	N/A

Alarm Switch Settings for the Receiver Card

Switch Position	Alarm Indication	On	Off
1	Loss of Optical Signal	Enabled	Disabled
2	N/A	N/A	N/A

Indicator LEDs

The Fiberlink® 7500 Series has three integral indicator LEDs that are used to monitor the state of the unit. Card versions have an additional Alarm LED.

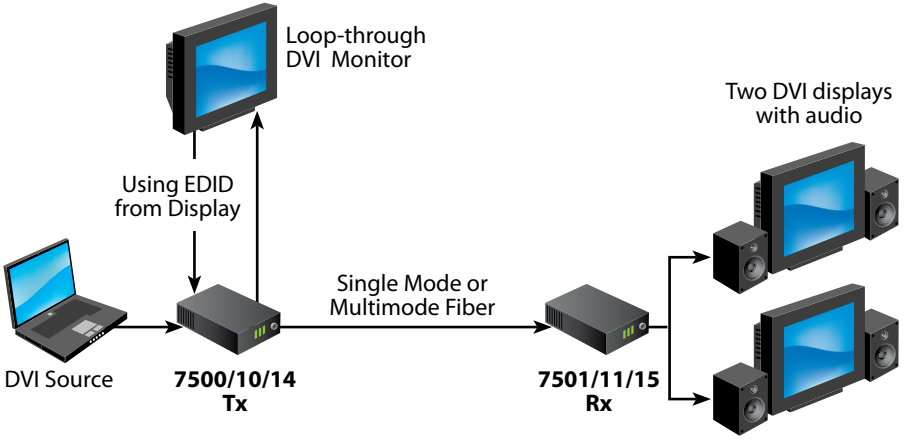
Transmitter LEDs

LED	Status	Definition
Power	On	Indicates that correct power has been applied.
Video	Off On	Indicates that no proper DVI signal is present Indicates that a proper DVI signal is present
Audio	Off Blinking	Indicates no audio is present Indicates audio is present
Alarm	On	Loss of video (card version only)

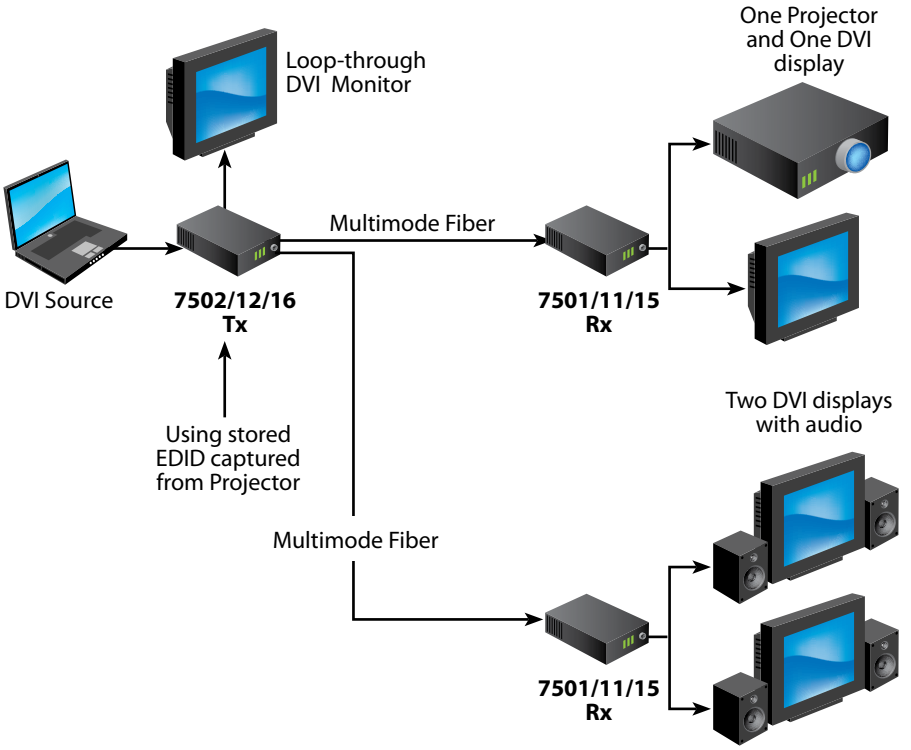
Receiver LEDs

LED	Status	Definition
Power	On	Indicates that correct power has been applied.
Video	Off On	Indicates that no proper DVI signal is present Indicates that a proper DVI signal is present
Audio	Off Blinking	Indicates that no audio is present Indicates audio is present
Alarm	On	Loss of video (card version only)

Basic Configuration:



Advanced Configuration:



Operating Pointers

The 7500 Series is available in versions that operate with multimode (MM, 62.5u, 50u) and single mode (SM) optical fibers. Be certain that the correct size fiber is being used for this particular transmitter/receiver combination.

Also, remember to check attenuation and bandwidth of the fiber optic cable. The system will only operate properly if these specifications fall within the range of the system's loss budget.

Troubleshooting

Multimode fiber optic cable contains an optical fiber with a light carrying "core" that is only .0025 inches (62.5 microns) in diameter. Single mode fiber optic cable has an even smaller "core," only .00032 to .0004 inches (8-10 microns). This is smaller than a human hair! Therefore, any minute particles of dirt or dust can easily block the fiber from accepting or radiating light. To prevent this from happening, always use the provided dust caps when ever optical connectors are exposed to air. It is also a good idea to gently clean the tip of an optical connector with a lint-free cloth moistened with alcohol whenever dust is suspected.

The status of the LEDs should provide the first clue as to the origin of any operational failure. If these are off, it usually means that the fiber is broken or has too much attenuation. Next, be certain that the input and output signal connections are correct.

An optical power meter, such as the Fiberlink® 6615, a visible light source, such as the Fiberlink® 6610, and a Three Wavelength Light Source, such as the Fiberlink® 6620, can greatly assist and expedite troubleshooting of fiber optic transmission systems and are recommended tools all installers should have available.

Finally, although multimode and single mode devices may look the same, they will not operate properly together. Using the wrong device or fiber can easily add more attenuation than specified, resulting in poor overall performance.

If, after reviewing the above possibilities, the system is still not operating, please contact the Customer Service Department for further assistance. If you suspect your problem is caused by the optics or the fiber optic cable, and you have an optical power meter, please take the appropriate measurements prior to contacting support.

Maintenance and Repairs

The Fiberlink® 7500 Series has been manufactured using the latest semiconductor devices and techniques that electronic technology has to offer. They have been designed for long, reliable and trouble-free service and are not normally field repairable.

Should difficulty be encountered, Communications Specialties maintains a complete service facility to render accurate, timely and reliable service of all products.

The only maintenance that can be provided by the user is to ascertain that optical connectors are free of dust or dirt that could interfere with light transmission and that electrical connections are secure and accurate. Please see the Troubleshooting section of this manual for additional information.

An optical power meter, such as the Fiberlink® 6615, a visible light source, such as the Fiberlink® 6610, and a Three Wavelength Light Source, such as the Fiberlink® 6620, can greatly assist and expedite troubleshooting of fiber optic transmission systems and are recommended tools all installers should have available.

All other questions or comments should be directed to our Customer Service Department. It should be noted that many "problems" can easily be solved by a simple telephone call.

If you suspect your problem is caused by the optics or the fiber optic cable, and you have an optical power meter, please take the appropriate measurements prior to contacting support.

Certifications

Communications Specialties, Inc. (CSI) warrants that, for a period of three years after purchase by the Buyer, this product will be free from defects in material and workmanship under normal use and service. A Return Material Authorization (RMA) number must be obtained from CSI before any equipment is returned by the Buyer. All materials must be shipped to CSI at the expense and risk of the Buyer.

CSI's obligation under this warranty will be limited, at its option, to either the repair or replacement of defective units, including free materials and labor. In no event shall CSI be responsible for any incidental or consequential damages or loss of profits or goodwill.

CSI shall not be obligated to replace or repair equipment that has been damaged by fire, war, acts of God, or similar causes, or equipment that has been serviced by unauthorized personnel, altered, improperly installed, or abused.

RMA numbers and repairs can be obtained from:

Communications Specialties, Inc.
125 Comac Street
Ronkonkoma, New York 11779 USA
Tel: (631) 273-0404
Fax: (631) 273-1638

RMA numbers can also be obtained from our web site: **commspecial.com**

Please have your serial number available.

Broadcast the best results.

Scan Do® HD

DVI-I Computer Video to 3G/HD/SD-SDI Scan Converter with Genlock Input and Fiber Optic Output

The all-digital Scan Do® HD converts DVI input, at resolutions up to 1920 x 1080, to high definition (3G or HD) or standard definition (SD) SDI output, providing broadcast-quality video images. It supports all SMPTE 3G/HD-SDI output resolutions up to 1080p, and SD-SDI resolutions (NTSC and PAL), making it the most versatile model in the Scan Do® family. The Scan Do® HD is ideal for broadcasting on air or integrating into a professional video production system.

Features:

- Converts DVI (up to 1920x1200) to 3G/HD/SD SDI.
- Advanced scaling algorithms and 10 bit processing provide exceptionally clean and accurate broadcast quality output
- Supports 3G/HD SDI resolutions up to 1080p per SMPTE 424M, SMPTE 292 and SD SDI resolutions per SMPTE 259
- Genlock with full phasing control locks 3G/HD/SD SDI output to tri-level sync or black burst
- Ethernet port enables control via your facilities LAN or via the Internet
- Includes fiber optic output (SMPTE 297-2006) and two coaxial outputs (SMPTE 424M, 292 and 259)
- Image processing controls for brightness, contrast, saturation, hue and sharpness; variable flicker reduction
- Zoom & Shrink horizontally and vertically while maintaining the aspect ratio or set each independently
- Precisely position your image horizontally and vertically
- Quickly store and recall your favorite configurations through the remote control ports
- Internal color bar generator
- 1 RU high; includes mounting kit
- RoHS Compliant

Learn more at scandohd.tv

Fiberlink®
7500, 7510 & 7514 Series

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P/N 127593 Rev. F